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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/362,022	07/27/1999	ROBERT J. MEYER	D/96602Q1	6313

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09/29/2003

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EXAMINER

VIDA, MELANIE M

ART UNIT	PAPER NUMBER
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2697

DATE MAILED: 09/29/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/362,022

Applicant(s)

MEYER ET AL.

Examiner

Melanie M Vida

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 30 June 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Terminal Disclaimer

1. The terminal disclaimer filed on 6/30/03 disclaiming the terminal portion of any patent granted on this application, which would extend beyond the expiration date of U.S. Application 09/362,022 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Response to Arguments

2. In response to the Office Action mailed on March 31, 2003, applicants have submitted an amendment for reconsideration filed on 6/30/03 arguing to traverse the rejection of pending claims 1-17.

Response to Amendment

3. Applicant's argument with respect to claim 1, have been considered but are moot in view of the new ground(s) of rejection. In view of the Applicant's remarks, it is agreed that Mailloux does not teach the auxiliary pixels as disclosed in the specification, on pg. 8, lines 19-22, "that is, auxiliary pixels, 106 & 108... may be of sub-critical density, that is below the normal density threshold for printout in their respective regions so that they are non-printing in effect". Thus a new ground of rejection is applied below.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding, **claim 1**, the Examiner cites the claim “an auxiliary pixel replacing one of the plurality of original pixels to improve the printing of the halftone cell”; as being unclear after further investigating the Applicant’s disclosure. The specification on pg. 8, lines 7-9, recites “auxiliary pixels as substituted into the bitmap have been placed close to the edge of, but both the interior and exterior to the image shape”. The Examiner finds no support in the specification for the “where an auxiliary pixel replacing one of the plurality of original pixels to improve the printing of the halftone cell” as cited in the claim language, (claim 1, lines 3-4).

Regarding, **claims 2-3**, the Examiner cites the claims, “the first auxiliary pixel comprises a “black” auxiliary pixel”, and “the first auxiliary pixel comprises a “white” auxiliary pixel”, (claim 2, lines 1-2; claim 3, lines 1-2, respectively). However, after reading the specification, there are two distinct definitions for a black auxiliary pixel and a white auxiliary pixel. For example, the specification on pg. 8, lines 9-11, defines a white auxiliary pixels as a “non-printing pixel that is placed exterior to an image shape”, and a black auxiliary pixel as a “non printing pixel that is placed interior to an image shape”. The examiner also cites a different definition for the respective “black” and “white” auxiliary pixels in the specification on pg. 9, lines 11-15,

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wherein a “black” auxiliary pixels is “on” pixels in an otherwise off area. The specification recites that “white” auxiliary pixels are “off” pixels in an otherwise “on” area.

The term “**auxiliary pixels**” in **claims 1-22** are used by the claim to mean “non-printing pixels”, while the accepted meaning is “pels or pixels to be rendered on an image recording medium”. The term is indefinite because the specification does not clearly redefine the term, (pg. 8, lines 4-22).

The term “**black auxiliary pixel**” in claim 2 is used by the claim to mean “a non-printing pixel that is placed exterior to an image shape”, while the accepted meaning is an “ON bit, or a gradation value of 255”. The term is indefinite because the specification does not clearly redefine the term, (pg. 8, lines 9-11).

The term “**white auxiliary pixel**” in claim 3 is used by the claim to mean “a non-printing pixel that is placed interior to an image shape”, while the accepted meaning is “OFF bit, or a gradation value of 0”. The term is indefinite because the specification does not clearly redefine the term, (pg. 8, lines 9-11).

Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 9, and 13** are rejected under 35 U.S.C. 102(b) as being anticipated by Chung et al. (USP 5,818,504), hereinafter, Chung.

Regarding, **claim 9**, as best understood from the claim language, Chung has a laser printer, as shown in figure 8, with a method for an improved image pattern, which reads on “a method for improving the printing of an image”, (col. 7, lines 24-25). Chung teaches that a laser printer scans a line divided into pixels areas and modulates the laser beam so that the selected pixel areas are exposed to light, which reads on “receiving a source image comprising original pixel data”, (col. 1, lines 32-38). Further, Chung teaches of a selected center pixel (43) in a portion of a raster pattern with a 3x3 window of pixels (41), as shown in figure 3, which reads on “processing the source image original pixel data with a halftone”, surrounded by the adjacent pixels (45-46), energized for short periods of time, insufficient to create printed pixels in an image, but to allow the center pixel (43) to expand outwardly, which reads on “including embedded auxiliary pixels therein”, (col. 4, lines 57-58; col. 6, lines 52-57).

Regarding, **claim 13**, as best understood by the claim language, please refer to the corresponding rejection in claim 9.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. **Claims 1-3** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tung, (USP 4,847,641), (hereinafter, Tung), as cited by the applicant, and further in view of Chung, (USP 5,818,504).

Regarding, **claim 1**, Tung teaches of a character generator (411) that modulates the laser beam (17) to provide the desired characters, which reads on “an improved font”, (col. 10, lines 65-67). As shown in figures 6a-6b, each bit of data in an image passes through a window (109) in different positions until it reaches the center cell (111), which reads on “a halftone cell including a plurality of original pixels”, (col. 12, lines 59-60; col. 13, lines 3-5).

Tung does not expressly disclose, “an auxiliary pixel replacing one of the plurality of original pixels to improve the printing of the halftone cell”.

However, Chung teaches of pixels (45) and (46), represented as smaller circles, with a sub-pixel exposure less than a threshold for development, such that no extra dot will be developed, which reads on “auxiliary pixel”, (col. 6, lines 52-56). Further, the adjacent pixels surround a center pixel (50), and increase the optical energy applied to the pixel (43), which reads on “replacing one of the plurality of original pixels”, (col. 6, lines 53-54). Chung teaches the use of Resolution Enhancement Technology (RET) to selectively expand the charge pattern or selectively narrow it by comparing the pixels to known pixel patterns using RET to detect irregularities in a print image, which reads on “to improve the printing of the halftone cell”, (col. 6, lines 30-35; col. 9, lines 14-16).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify Tung’s improved font and a halftone cell, with Chung’s auxiliary pixel.

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One of ordinary skill in the art would have been motivated to use auxiliary pixels in order to compensate for charge irregularities and selectively expand or selectively narrow a charge pattern, given the express suggestion of Chung, (col. 9, lines 14-19).

Regarding, **claim 2**, as best understood by the claim language, Chung teaches of increasing the toner at pixel (43) with additional optical energy applied adjacent to the pixel (43), as represented by small circles (45) and (46), which reads on “wherein the first auxiliary pixel comprises a “black” auxiliary pixel”, (col. 6, lines 50-57).

Regarding, **claim 3**, as best understood by the claim language, Chung teaches of selectively narrowing the charge pattern in an image where certain regions of imaging are excessive, which reads on “wherein the first auxiliary pixel comprises a white auxiliary pixel”, such that the duration of energy applied to the photoreceptor will reduce the pixel, (col. 9, lines 15-20).

9. **Claims 4- 8**, are rejected under 35 U.S.C. 103(a) as being unpatentable over Tung (USP 4,847,641), as cited by the applicant, and further in view of Chung, (USP 5,818,504) as applied to claim 1 above, and further in view of the applicant’s cited well-known prior art (hereinafter, Admission).

Regarding, **claims 4- 8**, the improved halftone of claim 1, but fails to expressly disclose the following:

- a. Clustered dot type, (claim 4, line 2),
- b. Dispersed dot type, (claim 5, line 2),
- c. Clustered cell is a compact dot type, (claim 6, lines 1-2),
- d. Clustered cell is a spiral-dot type, (claim 7, lines 1-2),

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e. Halftone cell is a stochastic, (claim 8, lines 1-2).

First, the Admission teaches that a clustered dot type is a well-known method used in prior art for rendering a halftone image from continuous image in the specification, (page 12, lines 5-10). Second, the Admission teaches that a dispersed dot type is a well-known type of a halftone cell used in the image halftone art in the specification, (page 12, lines 5-10). Third, the Admission teaches that the clustered cell type may alternatively be a compact type dot, or a spiral-dot type because it is commonly known in the image halftone art as per the specification, (page 12, line 19). Fourth, the Admission teaches that the halftone cell may alternatively be a stochastic type as is commonly known in the image halftone art as per the specification, (page 12, lines 20-23).

At the time the invention was made, it would have been obvious to one of ordinary skill in the halftone reproduction art to modify Chung's teachings of embedding auxiliary pixels in an image to improve the evenness of toner deposition using alternative forms of the halftone cell such as the clustered cell types, or the halftone cell types mentioned above.

One of ordinary skill in the art would have been motivated to do this in order to provide various types of halftone cells, since some cells produce better with xerographic and electrostatically based printer technologies as disclosed by the applicant (page 12, lines 11-13).

10. **Claims 10-12, 15-17** are rejected under 35 U.S.C. 103(a) as being obvious over Chung, (USP 5,818,504) as applied to claim 9 and 13 above, and further in view of the applicant's cited well-known prior art (hereinafter, Admission).

Regarding, **claims 10-12, 15-17**, Chung teaches the method for improving the printing of an electrostatic image of claim 9, but fails to expressly disclose the step of processing using:

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- a. ...”halftones of a clustered dot type”, (claim 10, line 3),
- b. ...”halftones of a dispersed dot type”, (claim 11, line 3),
- c. ...”halftones of a stochastic type”, (claim 12, lines 2-3).

First, the Admission teaches that a clustered dot type is a well-known method used in prior art for rendering a halftone image from continuous image in the specification, (page 12, lines 5-10). Second, the Admission teaches that a dispersed dot type is a well-known type of a halftone cell used in the image halftone art in the specification, (page 12, lines 5-10). Third, the Admission teaches that the clustered cell type may alternatively be a compact type dot, or a spiral-dot type because it is commonly known in the image halftone art as per the specification, (page 12, line 19). Fourth, the Admission teaches that the halftone cell may alternatively be a stochastic type as is commonly known in the image halftone art as per the specification, (page 12, lines 20-23).

At the time the invention was made, it would have been obvious to one of ordinary skill in the halftone reproduction art to modify Chung’s teachings of embedding auxiliary pixels in an image to improve the evenness of toner deposition using alternative forms of the halftone cell such as the clustered cell types, or the halftone cell types mentioned above.

One of ordinary skill in the art would have been motivated to do this in order to provide various types of halftone cells, since some cells produce better with xerographic and electrostatically based printer technologies as disclosed by the applicant (page 12, lines 11-13).

With regards to **claim 15**, please refer to the like teachings of claim 10.

With regards to **claim 16**, please refer to the like teachings of claim 11.

Regarding **claims 17**, please refer to the like teachings of claim 12.

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11. **Claim 14** is rejected under 35 U.S.C. 103(a) as being obvious over Chung (USP 5,818,504) as applied to claim 13 above, and further in view of Bracco, (USP 6,181,438, hereinafter, Bracco).

Regarding, **claim 14**, Chung teaches the digital imaging system of claim 19, but fails to expressly disclose a digital front end.

However, Bracco teaches of an image input device, which reads on “a digital front end”, (col. 4, lines 43-45).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify Chung’s digital imaging system with Bracco’s digital front end.

One of ordinary skill in the art would have been motivated to use a digital front end, in order to receive an image by a scanning operation, given the express suggestion of Bracco, (col. 4, lines 45-47).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gwaltney et al. USP 6,456,394, method for reducing halo print defects associated with color images.

Awadalla et al. US Pre-Grant Publication, 2001/0012111 A1, a method to develop toner mass control using split sub pixel laser modulations.

Chung, US 5,835,123, a dot enhancement for laser imagers.

Loce et al. USP 6,297,889, a logic-based morphological process to isolate structure.

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Sunwoo et al. USP 6,192,160, hardware architecture for image dilation and erosion operations.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie M Vida whose telephone number is (703) 306-4220.

The examiner can normally be reached on 8:30 am 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly A Williams can be reached on (703) 305-4863. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Melanie M Vida
Examiner
Art Unit 2697

mmv

MMV
September 16, 2003

KA Williams
Kimberly A. Williams
Primary Examiner
Technology Center 2600